Money Savvy Kids Pilot Project
Introducing Financial Literacy to 50-Second Grade Classrooms

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1. DFI's Summary

- Highlights
- List of participants
- Statistical make up of classrooms
- Pre and Post Testing Summary
- Parents Survey Highlights
- Comments from Washington Teachers

2. Pre and Post Testing Evaluative Report

- Dr. Eric Hagedorn - Hagedorn Evaluation Services, El Paso, TX

3. Parent Survey Results

- Money Savvy Generation, Lake Bluffs IL

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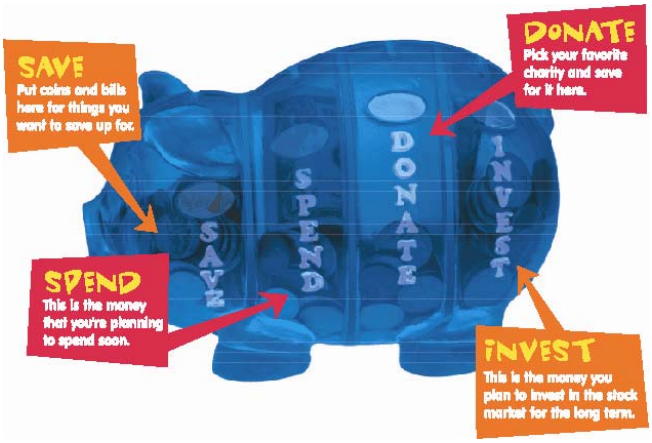
Washington State Department of Financial Institutions
Money Savvy Kids Pilot Project
Highlights

Countless studies show the need to help young people establish sound financial habits early in life. After doing extensive research on financial literacy programs across the country, DFI administered a financial literacy pilot program for 50 elementary school classrooms.

The department worked with Money Savvy Generation, a non-profit organization based in Chicago, to introduce the Money Savvy Kids curriculum to Washington Schools. Money Savvy Kids is an eight-week curriculum that helps students learn the essentials of money management – saving, spending, donating, and investing. It teaches basic personal finance by incorporating math, reading, social studies, science, art, and music. The curriculum meets Washington Essential Academic Learning Requirements for Social Studies and Economics.

The pilot was the most expansive project of its kind in the nation for both Money Savvy and a state regulator. DFI helped recruit 50 geographically and socio-economically diverse elementary classrooms throughout Washington State. The pilot project was incorporated into teaching plans during the 2004/05 school year.

In preparation, 43 teachers representing 50 classrooms attended training seminars. During the training, each teacher received an "Instructor Materials Kit", which included: a 136-page Teachers Handbook with complete scripting; a CD-ROM with 109 color presentation images, a Money Savvy Kids song and four newsletters; one blue Money Savvy Pig for the teacher to use in discussions about money choices; and one Student Activity Workbook over viewing the ABCs of money management and with activities for every lesson. An important part of Money Savvy Kids curriculum is the Money Savvy Pig -- a four slot piggy bank. Each child participating in the program received a Money Savvy Pig.



The pilot project included pre and post testing (available in English and Spanish) of the students to measure the effectiveness of introducing a financial literacy curriculum in the classroom. In addition to testing the children, DFI created a survey to measure the impact of the program at home. With this additional test, DFI hoped to demonstrate that including financial literacy programs in the school system can have a positive impact on the economic potential of families in our state.

A formal statistical evaluation by Dr. Eric Hagedorn of the student testing and the complete results of the parent survey follow this summary.

The following classrooms participated in DFI's Money Savvy Pilot Project.

School Name	School City	District Name	Percent Free Lunch	Percent Asian	Percent Black	Percent Hispanic	Percent Indian
Purdy Elementary	Gig Harbor	Peninsula	14%	5%	1%	4%	3%
Spanaway Elementary	Spanaway	Bethel	49%	13%	15%	8%	6%
Discovery Elementary	Sammamish	Issaquah	1%	19%	0%	4%	0%
Lake Quinault School	Amanda Park	Quinault Lake	82%	0%	2%	25%	8%
DeLong Elementary	Tacoma	Tacoma	57%	9%	28%	9%	2%
DeLong Elementary	Tacoma	Tacoma	57%	9%	28%	9%	2%
DeLong Elementary	Tacoma	Tacoma	57%	9%	28%	9%	2%
DeLong Elementary	Tacoma	Tacoma	57%	9%	28%	9%	2%
Sunset Elementary	Bellevue	Issaquah	4%	17%	1%	2%	1%
Whitman Elementary	Tacoma	Tacoma	69%	14%	22%	10%	1%
Kalama Elementary	Kalama	Kalama	29%	2%	1%	3%	0%
Orchard Heights	Port Orchard	South Kitsap	39%	10%	5%	8%	3%
Tukwila Elementary	Tukwila	Tukwila	64%	29%	16%	19%	0%
Jason Lee Elementary	Richland	Richland	36%	4%	4%	7%	1%
Jason Lee Elementary	Richland	Richland	36%	4%	4%	7%	1%
Jason Lee Elementary	Richland	Richland	36%	4%	4%	7%	1%
Jason Lee Elementary	Richland	Richland	36%	4%	4%	7%	1%
Cascade Elementary	Renton	Renton	50%	18%	21%	13%	1%
Skyview Elementary	Spokane	East Valley	37%	5%	1%	3%	1%
Grass Lake	Kent	Kent	15%	3%	1%	2%	2%
Sherman Elementary	Tacoma	Tacoma School District	31%	3%	10%	6%	1%
Sherman Elementary	Tacoma	Tacoma School District	31%	3%	10%	6%	1%
Sherman Elementary	Tacoma	Tacoma School District	31%	3%	10%	6%	1%
Sherman Elementary	Tacoma	Tacoma School District	31%	3%	10%	6%	1%
Finley Elementary	Kennewick	Finley School District	57%	1%	0%	21%	1%
Discovery Lab	Yakima	Yakima	34%	2%	7%	22%	3%
Discovery Lab	Yakima	Yakima	34%	2%	7%	22%	3%
Tillicum Elementary	Lakewood	Clover Park School Dist	93%	10%	21%	17%	1%
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%
McDonald Elementary	Spokane	Central Valley	38%	1%	2%	5%	2%
Talbot Hill Elementary	Renton	Renton School District	35%	23%	18%	14%	1%
Talbot Hill Elementary	Renton	Renton	35%	23%	18%	14%	1%
Discovery Elementary	Sammamish	Issaquah	1%	19%	0%	4%	0%
Kennydale Elementary	Renton	Renton	36%	22%	12%	6%	1%
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%

School Name	School City	District Name	Percent Free Lunch	Percent Asian	Percent Black	Percent Hispanic	Percent Indian
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%
Pioneer Elementary	Sunnyside	Sunnyside School Dist	89%	1%	0%	86%	0%
Tukwila Elementary	Tukwila	Tukwila School District	64%	29%	16%	19%	0%
Spanaway Elementary	Spanaway	Issaquah	49%	13%	15%	8%	6%
McDonald Elementary	Spokane	Central Valley	38%	1%	2%	5%	2%
McDonald Elementary	Spokane	Central Valley	38%	1%	2%	5%	2%
Discovery Elementary	Sammamish	Issaquah	1%	19%	0%	4%	0%
Terrace Park School	Mountlake Terrace	Edmonds	24%	12%	5%	8%	4%
Kennydale Elementary	Renton	Renton	36%	22%	12%	6%	1%
Wa He Lut Indian School	Olympia			0%	0%	0%	100%
Discovery Lab	Yakima	Yakima	34%	2%	7%	22%	3%
Whitman Elementary	Spokane	Spokane School District	81%	3%	7%	5%	4%

Statistics

- **Free lunch**
  - State Average: 42%
  - Pilot Average: 47%

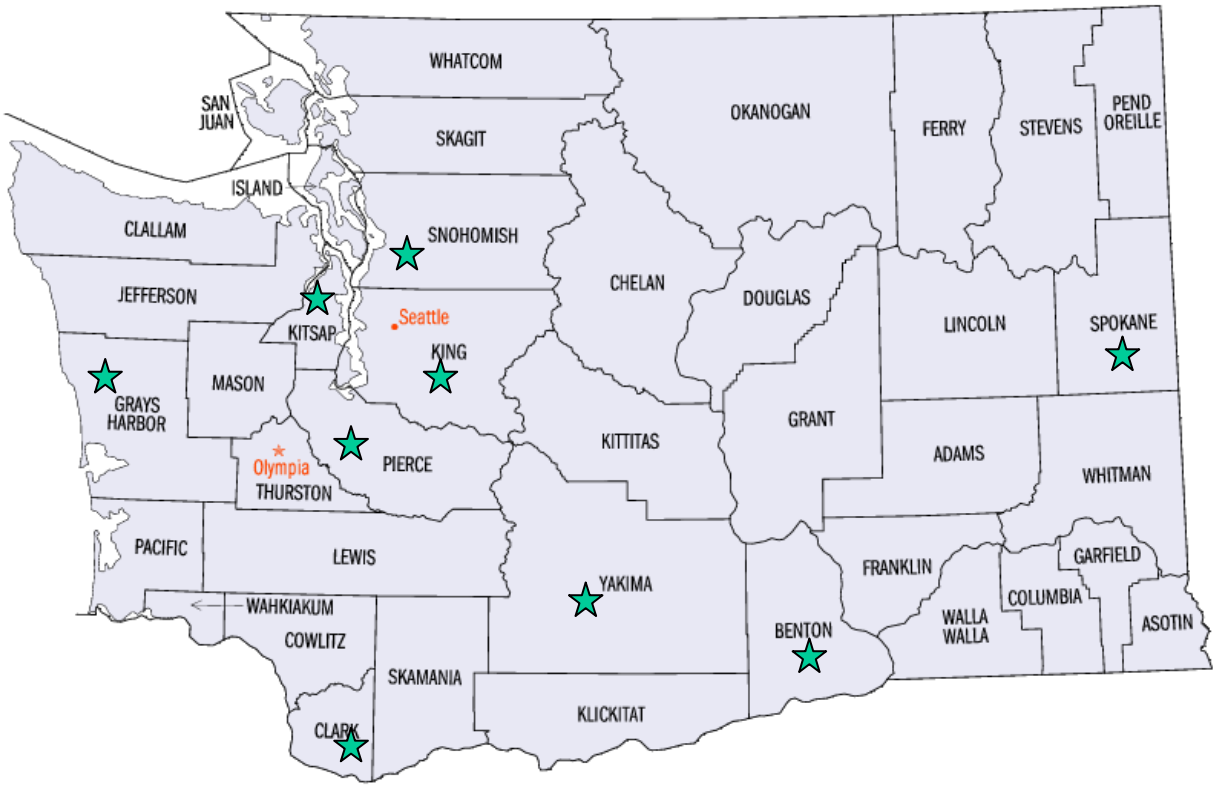
- **Asian**
  - State Average: 6%
  - Pilot Project: 8%

- **African American**
  - State Average: 6%
  - Pilot Project: 8%

- **Hispanic**
  - State Average: 12%
  - Pilot Project: 20%

- **Native American**
  - State Average: 4%
  - Pilot Project: 3%

- **Schools within the Puget Sound Corridor**: 59%
- **Rural Classrooms**: 41%



- **Classes per County**
  - Benton 5
  - Clark 1
  - Grays Harbor 1
  - King 10
  - Kitsap 1
  - Pierce 14
  - Snohomish 1
  - Spokane 4
  - Yakima 9

Summary of Conclusions from Student Testing
(The complete evaluation of the pilot project, written by Dr. Eric Hagedorn, follows.)

Overall, the data indicate that the Money Savvy Kids program is effective in positively affecting students' attitudes and knowledge about spending, saving and investing money. The data indicates statistically significant improvements on seven out of ten items.

When the data was analyzed by school, some statistically significant differences occurred between some schools. When the scores at these schools were linked with the demographic variables of percentage of free or reduced lunch or percentage of non-Caucasians, no identifiable pattern emerged. Some schools with high percentages of minorities did better than those with high percentages of Caucasians and vice versa. These differences in school performance are likely attributable to teacher characteristics, including pedagogical approach.

The data indicated that the Money Savvy Kids curriculum worked effectively for students of varied backgrounds in Washington State. This is consistent with results found in a previous study where participating students in affluent Chicago suburbs learned comparably to urban Chicago public school students, as measured with the Money Savvy Kids Assessment. These two studies suggest that the Money Savvy Kids curriculum is effective across a wide variety of English reading students.

Summary of Parent Survey Results
(The complete results of the parent survey follow.)

- 93% of parents feel that the Money Savvy Kids curriculum has increased their child's knowledge and skills in an important subject area.
- 98% of parents feel that financial literacy is very relevant in their child's future.
- 95% of participating parents stated that they feel that their children understand the importance of setting financial goals and the choices that they can make in managing their money.
- 96% of parents feel that the Money Savvy Pig will continue to be used at home.
- 81% of parents stated that the Money Savvy Kids curriculum has caused discussions at home about savings or investing or other basic personal finances.
- 48% of parents said that the Money Savvy Kids curriculum would change how the adults in the household handled their money.
- 94% of parents support the idea of this program being expanded across the state.

When asked what they felt to be the most successful aspects of the curriculum, parents said the following:

- The piggy bank with its slots was a great visual and physical help.
- Teaching the children how to save.
- This program started conversation about saving money for the future.
- It is relevant to everyone's future.
- It taught our children to save and to be responsible with their money. (Translated)
- Learning to budget money wisely.
- My son said he enjoyed learning about the history of money best.
- Learning and comprehending the concepts of spend, save, donate and invest. My child now understands and has an appreciation for basic economics.
- Teaching the importance of having a saving goal.
- Getting my son to think about economic issues.

- The children were taught to be good stewards of their money. They learned the value of 'hard earned' money.
- Reinforcing what we teach at home, it seems to sink in more when it comes from school!
- It opened a dialog between my child and me about financial topics.
- That my child is excited to save her money!
- I liked how the program breaks down money concepts in an easy to understand format, and that students are creatively and actively involved in the learning process.
- Instills financial awareness at an early age. Should help down the road.
- The introduction of donating to other not as fortunate and the value inherent to that.
- Teaching the kids to think about how to budget their money.

Feedback from Teachers

"We went through the lesson about charity last week and it had a huge impact on several of my students. This morning I opened the classroom door and an excited student greeted me with a bag of coins and bills and told me he and his sister had worked all weekend to earn money for the food bank. I was a little taken back. I asked him what food bank he was referring to, and he said it was for the food bank my sister directs. He has never met her, and the food bank is not even in our area. He just took to heart the importance of giving to charity, and he knew my sister directed a food bank. I talked to his mom and I found out that he and his sister (who is also in my class) worked all weekend walking dogs and selling lemonade and cookies! The Money Savvy lessons are powerful."
-Kristie Humphreys (Orchard Heights)

"The curriculum is very well done and organized. The workbooks are age appropriate and supported the activities we did in class. The Money Savvy Pig banks really hooked my students into learning about personal finance. I really like the CD that came along with the curriculum. The graphics and concepts on the CD engaged the children and held their interest. I'd love to be able to teach this curriculum every year."
- Anonymous (Second grade teacher from Washington)

"We have completed the Money Savvy Pig program last month. From the feedback I received I can tell you that [parents] loved it! Parents were very impressed with the money tips and information about saving for various things. I would love to do it again!"
-Carrie Kuhl, McDonald Elementary School

"I have never taught personal finance to my class before because I felt the concepts were too difficult for them to understand. Your program proved me wrong. Thank you for the opportunity to teach such a great program."
- Anonymous (Second grade teacher from Washington)

"The song is a big hit with my kids and the pig bank is even bigger. I'm very happy to have done this program and would love to do it again next year."
-Vicki M. (Sherman Elementary School)

"I have to say the children's learning and response to the program exceeded my expectations. My class learned these concepts (thanks to the Money Savvy Pig) and more. They became experts at knowing what goods and services were. They knew the history of money and had a good understanding of where money comes from."
-Anonymous (Second grade teacher from Washington)

MONEY SAVVY KIDS™
Basic Personal Finance Curriculum

Evaluative Report
Department of Financial Institutions Program
Washington State

September, 2005

Eric A. Hagedorn, Ph.D.

Hagedorn Evaluation Services
El Paso, TX

Money Savvy Generation®

Introduction

The purposes of this study are to: 1) measure the effectiveness of a program called Money Savvy Kids™ on the attitudes and knowledge of young children in public schools in Washington State; and 2) to begin to assess if the program is differentially effective with children of varied demographic variables (e.g. lower socio-economic status, ethnicity, school location, etc).

Money Savvy Kids™ is curriculum developed by Money Savvy Generation of Lake Bluff, Illinois.. The curriculum includes eight lessons:

- The History of Money
- Where Does Money Come From?
- Kids Can Earn Money Too!
- Saving Money and Bank Field Trip
- Spending Money
- Donating Money
- Investing Money
- Family Money Press Conference

An important part of Money Savvy Kids™ curriculum is the Money Savvy Pig™. This is a four slot piggy bank. It provides teachers and parents with a fun and interesting way to introduce children to saving, spending, investing, and donating. Each child participating in the program receives a Money Savvy Pig™. During the academic year 2004-2005, 43 elementary school teachers, representing 50 classrooms received Money Savvy Kids™ materials and curriculum training. Training was provided either in person, via telephone or via self-study materials. They were asked to implement the program in their classrooms and to use a pre-and post test with the students. Usable pre and post tests were received back from 14 classrooms, representing two hundred and eighty-two second graders and 19 third graders with pre- and post-tests that could be matched (by identifiable names)

To investigate the effectiveness of this program, Dr. Mark Schug of the Center for Economics Education at the University of Wisconsin – Milwaukee, developed survey (see Appendix A) measuring student beliefs about savings habits, handling money, the role of business, etc. This survey has been used in each subsequent evaluation study since the first such study at the end of the 2003-2004 school year. This study was featured in the academic journal *The Social Studies* in Spring 2005 (Schug & Hagedorn, 2005). This survey was given to the Washington students before receiving their Money Savvy Pigs and after they had completed their training. This report presents the analysis and interpretation of the results of those surveys.

Conclusions

Overall, the aggregate data indicate that the Money Savvy Kids™ program is effective in positively affecting students' attitudes and knowledge about spending, saving and investing money. The paired samples data indicates statistically significant improvements on seven out of ten items. While the effect sizes were small, the pre-test scores on Items 1, 2, 4, 6, 7 & 8 were already leaning the correct way. The small increases implied an even greater majority choosing the correct response, and it is very unlikely this occurred by chance.

None of the significant changes, for the entire sample, indicated inappropriate understandings. The non-significant changes on Items 3, 5 and 9 do not indicate a problem, however. Item 3 refers to having things when I want them – a position opposed to saving. Students disagreed with this on average on the pre-test and even more so on the post-test, but not with statistical significance. Item 5, which states: "The thing I enjoy most about earning money is getting to spend it later on." This statement is somewhat confusing: it implies saving with "later on" but refers explicitly to spending. The mean on the pre-test was 2.548 (SD=.7540) and on the post-test 2.568 (SD=.7536). These mean scores are between agree and uncertain, moving slightly towards agreeing. Item 9 states: "It is important for families to keep money in real banks." The pre-test mean was 2.688 (SD=.7039) and the post-test mean was 2.714 (SD=.6414). Both these scores indicate fairly strong agreement, with a change too small to be statistically significant. This item may be common knowledge for most students, even before the pre-test.

When the data were analyzed by school, some statistically significant differences occurred between some schools. When the scores at these schools were linked with the demographic variables of percentage of free or reduced lunch or percentage of non-Caucasians, no identifiable pattern emerged. Some low SES schools did extremely well and others did poorly and the same may be said for the higher SES schools. Some schools with high percentages of minorities did better than those with high percentages of Caucasians and vice versa. These differences in school performance are likely attributable to teacher characteristics, including pedagogical approach.

In this evaluator's professional opinion, these data indicate that the Money Savvy Kids™ curriculum worked effectively for students of varied backgrounds in Washington State. This is consistent with results found in a previous study where participating students in affluent Chicago suburbs learned comparably to urban Chicago public school students, as measured with the Money Savvy Kids Assessment. These two studies suggest the generalizability of the statement: the Money Savvy Kids™ curriculum is effective across a wide variety of English reading students.

Methodology

The Money Savvy Kids™ Assessment is a 10 item, Likert scale instrument. A three point response format was used: a smiley face for agree (with a value of 3), a straight mouth face for don't know or unsure (with a value of 2) and a frown face for disagree (with a value of 1). Dr. Schug had a literacy expert check the questions for roughly a second grade reading level.

The completed pre- and post-tests were to include the participating student's name. This would allow for matching individual pre- and post-tests. Once matched and recorded, either a paired-samples t-test or the non-parametric Wilcoxon Signed Ranks test would be performed on the data to determine if student responses changed from pre to post in a statistically significant manner. The paired samples t-test is appropriately used if the data did not differ significantly from a normal distribution. Normality is determined using the Kolmogorov-Smirnov test of normality (with Lillefiors correction) and the Shapiro-Wilk test. If the data do differ significantly from the normal distribution, one uses the Wilcoxon Signed Ranks test.

(Test and survey data can often deviate from the normal distribution due to floor effects on pre-tests and ceiling effects on post-tests. Another factor which can cause deviations from normality are outliers – test scores that are very low or very high. There are two general approaches to dealing with non-normality: data cleaning and transforming and using non-parametric statistics. Data cleaning includes removing outliers. Data transformations involve mathematical transformations of data, such as taking the logarithms of the data, and if this generates a normal distribution, doing statistical tests on the transformed scores. This evaluator prefers to accept the data as they are and use the appropriate non-parametric tests as needed.)

Any statistically significant changes from pre- to post- would be identified and interpreted. A statistically significant difference in means from pre- to post- indicates the likelihood that such a difference in mean in the population would occur by chance. For instance, an increase of mean score on item 3 of .31 (on a scale of 1 to 5) occurs by chance only once in a thousand, as indicated by a p value equal to .001. While this information implies statistical significance (likelihood of occurring by chance), it says nothing about "how big" or "how important" a change of .31 is. To begin to understand these issues, one calculates effect sizes. The effect size is essentially the ratio of the change to the standard deviation of the change scores. If the standard deviation of the change scores for Item 3 were around .3, the effect size would be about 1, indicating the change was roughly one whole standard deviation. In the literature, such an effect size is considered "large" (Kirk, 1995). If the standard deviation of the change scores was around 3 (indicate great variability in student responses to Item 3), the effect size would only be .10 – representing a change of about $1/10^{th}$ of a standard deviation. This effect size is considered "small," even though the likelihood that such a change occurred by chance is very unlikely.

Analysis of variance (ANOVA) with post-hoc tests was proposed to determine if students of a particular socio-economic status, ethnicity, or primary language preference perform differently on the Money Savvy Kids Assessment. ANOVA, however are only appropriate when the data are normally distributed and the assumption of equal variances is met. If these assumptions are not met the Brown-Forsythe robust test of equality of means and the non-parametric Kruskal-Wallis test would be used. While each of these tests would determine if statistically significant

differences in means occurred between different groups of students, they would not indicate which specific groups differed. To determine this (and begin to interpret exactly how the groups differed – by SES or language, etc.) post-hoc tests need to be interpreted. If the normality and equal variances assumptions are not met, such post-hoc tests are not available in standard statistical software. If this were the case, ANOVA results would be compared to the Brown-Forsythe and Kruskal-Wallis results. If they were similar, a conservative interpretation of the post-hoc tests would be used to interpret any significant differences. In the event that the ANOVA (or Brown-Forsythe and Kruskal-Wallis) tests did not indicate significant differences at all, one could interpret that the assessment scores did not vary by differing groups of students.

Results

Entire Sample: Mean Item Changes

301 students could be identified by name and completed the pre- and post-tests. The average scores and standard deviations for each item are given in Table 1. Post-test items marked with an asterisk indicate a statistically significant improvement in average student response from pre to post.

Table 1. Item response averages and standard deviations for paired samples data.

	Pre	**SD**	**Post**	**SD**
Item 1	2.676	0.5907	2.854***	0.4226
Item 2	1.590	0.8136	1.334***	0.6511
Item 3	1.399	0.7586	1.342	0.6825
Item 4	2.606	0.7167	2.716*	0.5801
Item 5	2.548	0.7540	2.568	0.7356
Item 6	2.548	0.7747	2.103***	0.9306
Item 7	2.196	0.7680	1.912***	0.8464
Item 8	2.610	0.6767	2.761**	0.5910
Item 9	2.688	0.7039	2.714	0.6414
Item 10	2.075	0.8805	1.944*	0.8719

Table 2. Significantly changed item response averages and effect size of changes.

Item	Z value	Exact 2-tailed significance	Effect size
1. I know a lot about how to handle my money.	-4.743	.000	0.27
2. I believe that people act selfishly when they save money.	-4.777	.000	0.28
4. I believe it is important to save money for the things that I want to buy in the future.	-2.327	.020	0.13
6. It is best to put the money you save in your room at home.	-5.923	.000	0.37
7. When I invest in stocks, I will always make money.	-4.844	.000	0.28
8. Business people help others by providing them with goods and services.	-2.973	.003	0.17
10. I believe saving money helps me but not help anyone else.	-2.121	.034	0.12

What Tables 1 and 2 tell us about student responses to individual items. The average response of the students to item 1 changed from 2.676, leaning towards agreeing, to 2.854, which leans even more towards strongly agreeing. The two-tailed exact significance implies that this improvement in average score could only have occurred by chance, less than 1 in1000 times. The .27 effect size indicates that this improvement is roughly one quarter of an average standard deviation in size. Cohen considers this a "small effect."

The average response of the students to item 2 changed from 1.590, on the disagreeing side of uncertain, to 1.334, which is more strongly disagreeing. This indicates an improvement in student understanding, because it is appropriate for students to disagree with this item. The two-tailed exact significance implies that this improvement in average score could only have occurred by chance, less than 1 in1000 times. The .28 effect size indicates that this improvement is slightly more than one quarter of an average standard deviation in size. Cohen considers this a "small effect."

The average response of the students to item 4 changed from 2.606, leaning towards agreeing, to 2.716, which leans even more towards strongly agreeing. The two-tailed exact significance implies that this improvement in average score could only have occurred by chance, less than 2 times in 100. The .13 effect size indicates that this improvement is 13% of an average standard deviation in size. Cohen considers this a "small effect."

The average response of the students to item 6 changed from 2.548, leaning towards agreeing, to 2.103, which is very close to uncertain. This indicates an improvement in student understanding, because even though the average post-test score is uncertain, this average decreased from the pre-test because more students disagreed with this item, which was the learning objective. The exact two-tailed significance implies that this change in average score could only have occurred

by chance less than 1 out of 1000 times. The .37 effect size indicates that this decrease in score is roughly 37% of an average standard deviation in size. Cohen considers this a "small effect."

The average response of the students to item 7 changed from 2.196, very close to uncertain, to 1.192, which leans more towards disagreeing. This indicates an improvement in student learning because it is more appropriate for students to disagree with this item. The two-tailed exact significance implies that this change in average score could only have occurred by chance, less than 1out of 1000 times. The .28 effect size indicates that this improvement is roughly 28% of an average standard deviation in size. Cohen considers this a "small effect."

The average response of the students to item 8 changed from 2.610, leaning towards agreeing, to 2.761, which leans more towards agreeing. This indicates an improvement in student learning because it is more appropriate for students to agree with this item. The two-tailed exact significance implies that this change in average score could only have occurred by chance, 1 out of 1000 times. The .17 effect size indicates that this improvement is roughly 17% of an average standard deviation in size. Cohen considers this a "small effect."

The average response of the students to item 10 changed from 2.075, very close to uncertain, to 1.944, which leans towards disagreeing. Even though the average post-test score is still very close to uncertain, this average decreased from the pre-test because more students disagreed with this item, which was the learning objective. The two-tailed exact significance implies that this change in average score could only have occurred by chance, 17 out of 1000 times. The .12 effect size indicates that this improvement is roughly 12% of an average standard deviation in size. Cohen considers this a "small effect."

Analyses by Demographic Groupings

Change Scores. Means and standard deviations for each of the item change scores (post-score minus pre-score) are listed in Table 3. Note that items 2, 3, 6, 7, and 10 are items that students should disagree with, therefore, negative change scores indicate a good thing – less students agreeing after than before.

Table 3. Descriptive statistics for change scores

	N	Mean	Std. Deviation
ch1	301	.1777	.66267
ch2	301	-.2558	.91525
ch3	301	-.0565	.81556
ch4	301	.1096	.84731
ch5	301	.0199	.92445
ch6	301	-.4452	1.19142
ch7	301	-.2841	1.00906
ch8	301	.1512	.88010
ch9	301	.0266	.85593
ch10	301	-.1312	1.08331
Valid N (listwise)	301		

These data all differed from the normal distribution - the Kolmogorov-Smirnov (with Lillefiors correction) and the Shapiro-Wilk tests of normality indicated that there was less than one chance in a thousand that these data could have come from a normally distributed population. Because of this, traditional ANOVA analyses (see Table 4) were supplemented with Welch and Brown-Forsythe robust tests of equality of means (see Table 5) and non-parametric Kruskal-Wallis tests (see Table 6). Significant differences are indicated with asterisks and yellow shading (for electronic version).

Table 4. Analyses of variance for each change score by school groupings.

		Sum of Squares	df	Mean Square	F	Sig.
ch1	Between Groups	5.098	11	.463	1.058	.396
	Within Groups	126.643	289	.438		
	Total	131.741	300			
ch2	Between Groups	26.147	11	2.377	3.051	.001*
	Within Groups	225.155	289	.779		
	Total	251.302	300			
ch3	Between Groups	7.907	11	.719	1.084	.374
	Within Groups	191.633	289	.663		
	Total	199.540	300			
ch4	Between Groups	10.686	11	.971	1.372	.186
	Within	204.696	289	.708		

	Groups					
	Total	215.382	300			
ch5	Between Groups	5.372	11	.488	.562	.859
	Within Groups	251.009	289	.869		
	Total	256.380	300			
ch6	Between Groups	62.273	11	5.661	4.500	.000*
	Within Groups	363.573	289	1.258		
	Total	425.846	300			
ch7	Between Groups	30.292	11	2.754	2.892	.001*
	Within Groups	275.171	289	.952		
	Total	305.463	300			
ch8	Between Groups	17.842	11	1.622	2.185	.015*
	Within Groups	214.530	289	.742		
	Total	232.372	300			
ch9	Between Groups	8.157	11	.742	1.013	.435
	Within Groups	211.630	289	.732		
	Total	219.787	300			
ch10	Between Groups	26.323	11	2.393	2.123	.019*
	Within Groups	325.743	289	1.127		
	Total	352.066	300			

You will note that Items 2, 6, 7, 8 and 10 are significantly different on each of this tests.

Table 5. Welch and Brown Forsythe Robust Tests of Equality of Means.

		Statistic(a)	df1	df2	Sig.
ch1	Welch	1.205	11	94.207	.294
	Brown-Forsythe	.966	11	161.124	.480
ch2	Welch	2.576	11	93.658	.007*
	Brown-Forsythe	2.891	11	181.520	.002*
ch3	Welch	1.486	11	92.450	.150
	Brown-Forsythe	1.191	11	199.369	.295
ch4	Welch	1.537	11	94.251	.131
	Brown-Forsythe	1.334	11	179.519	.209
ch5	Welch	.476	11	95.746	.914
	Brown-Forsythe	.533	11	149.056	.878
ch6	Welch	4.304	11	94.638	.000*
	Brown-Forsythe	4.369	11	192.175	.000*
ch7	Welch	2.966	11	94.765	.002*
	Brown-Forsythe	2.912	11	219.415	.001*
ch8	Welch	2.230	11	97.505	.018*
	Brown-Forsythe	2.307	11	160.109	.012*
ch9	Welch	1.187	11	97.122	.306
	Brown-Forsythe	1.080	11	221.998	.378
ch10	Welch	2.114	11	93.829	.026*
	Brown-Forsythe	2.009	11	197.393	.029*

a Asymptotically F distributed.

Table 6. Kruskal-Wallis test results.

	ch1	ch2	ch3	ch4	ch5
Chi-Square	14.235	33.990	13.870	15.212	6.259
df	11	11	11	11	11
Asymp. Sig.	.220	.000*	.240	.173	.856

Table 6 (continued). Kruskal-Wallis test results.

	ch6	ch7	ch8	ch9	ch10
Chi-Square	45.052	32.880	29.986	13.163	25.214
df	11	11	11	11	11
Asymp. Sig.	.000*	.001*	.002*	.283	.008*

The significant differences indicated by each of these tests for Items 2, 6, 7, 8 and 10 tell us that at least 2 of the 12 groups had mean scores significantly different from one another on each of these items. These tests do not tell us which 2 (or more) groups had such differences. To determine which groups are significantly different, one typically uses post-hoc tests. Post-hoc tests typically require normal data and homogeneity of variance. Because the data are definitely not normal, the post-hoc tests performed will be followed up with non-parametric Mann-Whitney tests. In addition any items violating homogeneity of variance will be tested with a post-hoc test appropriate for this situation – the Tamhane post-hoc test, rather than the Scheffe test..

Table 7. Test of homogeneity of variances.

	Levene Statistic	df1	df2	Sig.
ch2	2.455	11	289	.006*
ch6	1.877	11	289	.042
ch7	1.593	11	289	.100
ch8	3.524	11	289	.000*
ch10	1.225	11	289	.269

The Tamhane post-hoc tests indicate significant differences between groups 3 and 8 for Item 2 (p=.008) and between groups 1 and 11 for item 8 (p=.009). Item 2 refers to saving money being greedy. Group 8 represents a school with a fairly low percentage of free and reduced lunch students (14%). Their change score of .1563 is in the wrong direction – more of them believed saving money was greedy after participating in the program. Group 3 represents a school with a fairly high percentage of free and reduced lunch students (89%). They, on the other hand, had the greatest possible improvement with respect to item 2: - .6875. Double checking the difference between Group 8 and Group 3 with a Mann-Whitney test indicated a U of 371.5 (p= .000).

Item 8 states that business people help others by providing goods and services. Group 1 had the highest change in the correct direction: .5714. This school has 64% of its students participating in the free and reduced lunch program. Group 11, which had the greatest change in the wrong direction: -.4118, has 31% of its students eating free and reduced price lunches. The difference between Groups 1 and 8 gave a Mann-Whitney U of 125.5 (p=.000).

The Scheffe post-hoc tests on Items 6, 7, and 10 indicated significant differences between groups on only Item 6, between Groups 4 and 1, and 4 and 11. Item 6 refers to it being best to save your money in your room at home. This is an item where accurate learning leads to a negative change score. Group 4 had the largest change in the right direction: -1.375. Group 4 represents a school with a moderate percentage of free and reduced lunch students (49%). Group 1 had the smallest change in the right direction: -.0571. Group 1 is 64% free and reduced lunch. The difference between Groups 4 and 1 has a Mann-Whitney U of 189.0, which is significant at the p = .000 level. Group 11 was the only group which moved on average the wrong direction on Item 6 – a change score of .4706. As such, it differed quite a bit with Group 4 – having a Mann-Whitney U of 78.5, which is significant at the p=.000 level.

A final test to determine if demographic variables were related to scoring well or less well, on items with significant improvements, was to calculate both the parametric Pearson product moment (see Table 8) and the nonparametric Spearman correlation coefficients (see Table 9). While the sample size for these analyses was 11 (12 schools, minus one for which no demographic data were supplied), no statistically significant correlations of either type were found. This is consistent with the various analyses of variance. Note that the percentage of free and reduced lunches correlated strongly and significantly with percent minorities. Despite the small sample size, this well documented social statistic appeared unambiguously.

Table 8. Pearson correlation coefficients between demographic variables and significant change scores.

		freered	Permin
freered	Pearson Correlation	1	.735(**)
	Sig. (2-tailed)	.	.010
permin	Pearson Correlation	.735(**)	1
	Sig. (2-tailed)	.010	.
ch2ave	Pearson Correlation	-.079	-.139
	Sig. (2-tailed)	.817	.684
ch6ave	Pearson Correlation	-.311	-.070
	Sig. (2-tailed)	.351	.839
ch7ave	Pearson Correlation	-.021	.004
	Sig. (2-tailed)	.952	.990
ch8ave	Pearson Correlation	.243	.426
	Sig. (2-tailed)	.472	.191
ch10ave	Pearson Correlation	.305	-.063
	Sig. (2-tailed)	.362	.855
	N	11	11

** Correlation is significant at the 0.01 level (2-tailed).

Table 9. Spearman correlation coefficients between demographic variables and significant change scores.

		freered	permin
freered	Correlation Coefficient	1.000	.773(**)
	Sig. (2-tailed)	.	.005
permin	Correlation Coefficient	.773(**)	1.000
	Sig. (2-tailed)	.005	.
ch2ave	Correlation Coefficient	-.191	-.045
	Sig. (2-tailed)	.574	.894
ch6ave	Correlation Coefficient	-.527	-.264
	Sig. (2-tailed)	.096	.433
ch7ave	Correlation Coefficient	-.064	-.200
	Sig. (2-tailed)	.853	.555
ch8ave	Correlation Coefficient	.136	.427
	Sig. (2-tailed)	.689	.190
ch10ave	Correlation Coefficient	.255	-.164
	Sig. (2-tailed)	.450	.631
	N	11	11

** Correlation is significant at the 0.01 level (2-tailed).

Appendix A: Money Savvy Kids™ Assessment

Directions: Teachers, please read each of the following 10 sentences together in class. Explain the following directions to the children: If you ***agree*** with the statement, use your pencil to circle the ***face with the smile***. If you ***don't know*** or are ***unsure*** about the statement, circle the ***face with the straight mouth***. If you ***disagree*** with the statement, circle the ***face the frown***. Please circle only one face for each question.

1.	I believe I know a lot about how to handle my money.	
2.	I believe that people act selfishly when they save money.	
3.	I believe it is important to have the things I want when I want them.	
4.	I believe it is important to save money for the things that I want to buy in the future.	
5.	The thing I enjoy most about earning money is getting to spend it right away.	
6.	It is best to save your money in a secret place in your bedroom.	
7.	I believe that some places to put my savings - - like putting money in banks - - are safer than others.	
8.	I believe business people help others by providing them with goods and services to buy.	
9.	It is important for families to keep money in real banks.	
10.	I believe saving money helps me but not help anyone else.	

Kirk, R. E. (1995). *Experimental design: Procedures for the behavioral sciences* (Third ed.). Pacific Grove: Brooks/Cole Publishing Company.

Schug, M. C., & Hagedorn, E. A. (2005). The Money Savvy Pig™ goes to the big city: Testing the effectiveness of an economics curriculum for young children. *The Social Studies, 96*(2).

Parent Survey Results
Money Savvy Kids™ Curriculum
Sponsored by:
Department of Financial Institutions

June 2005

Money Savvy Generation®

Helping kids get smart about money

Project Profile:

Fifty classrooms across the State received the Money Savvy Kids™ Basic Personal Finance Curriculum materials, sponsored by The Department of Financial Institutions. The 8-unit curriculum was taught during the 2004-2005 school year. At the completion of the curriculum, parents completed a brief opinion survey.

Summary Findings:

- 250 parents provided feedback from 13 different Washington State Elementary schools.
- 93% of parents feel that the Money Savvy Kids curriculum has increased their child's knowledge and skills in an important subject area.
- 98% of parents feel that financial literacy is very relevant in their child's future.
- 95% of participating parents stated that they feel that their children understand the importance of setting financial goals and the choices that they can make in managing their money.
- 96% of parents feel that the Money Savvy Pig will continue to be used at home.
- 81% of parents stated that the Money Savvy Kids curriculum has caused discussions at home about savings or investing or other basic personal finances.
- 48% of parents said that the Money Savvy Kids curriculum would change how the adults in the household handled their money.
- 94% of parents support the idea of this program being expanded across the state.

For more information please contact:

Money Savvy Generation
910 Sherwood Drive, Suite 17
Lake Bluff, Illinois 60044
(847) 234-9477

Money Savvy Generation®
Helping kids get smart about money

Best features of this program were (selected comments):

- The piggy bank with its slots was a great visual and physical help.
- Teaching the children how to save.
- This program started conversation about saving money for the future.
- It is relevant to everyone's future.
- It taught our children to save and to be responsible with their money. (Translated)
- The use of practical math.
- Learning to budget money wisely
- My son said he enjoyed learning about the history of money best.
- Learning and comprehending the concepts of spend, save, donate and invest. My child now understands and has an appreciation for basic economics.
- Teaching the importance of having a saving goal.
- Getting my son to think about economic issues.
- The children were taught to be good stewards of their money. They learned the value of 'hard earned' money.
- Reinforcing what we teach at home, it seems to sink in more when it comes from school!
- Raising awareness and foster concrete skills related to money.
- It opened a dialog between my child and me about financial topics.
- Comparison shopping skills; don't give into the 'gimmes;' narrowing down the 'want' list.
- That my child is excited to save her money!
- Short term/long term goal setting
- I liked how the program breaks down money concepts in an easy to understand format, and that students are creatively and actively involved in the learning process.
- Instills financial awareness at an early age. Should help down the road.
- My child's excitement to put money in parts of the bank.
- The introduction of donating to other not as fortunate and the value inherent to that.
- Teaching the kids to think about how to budget their money.

Suggestions for improvement include (selected comments):

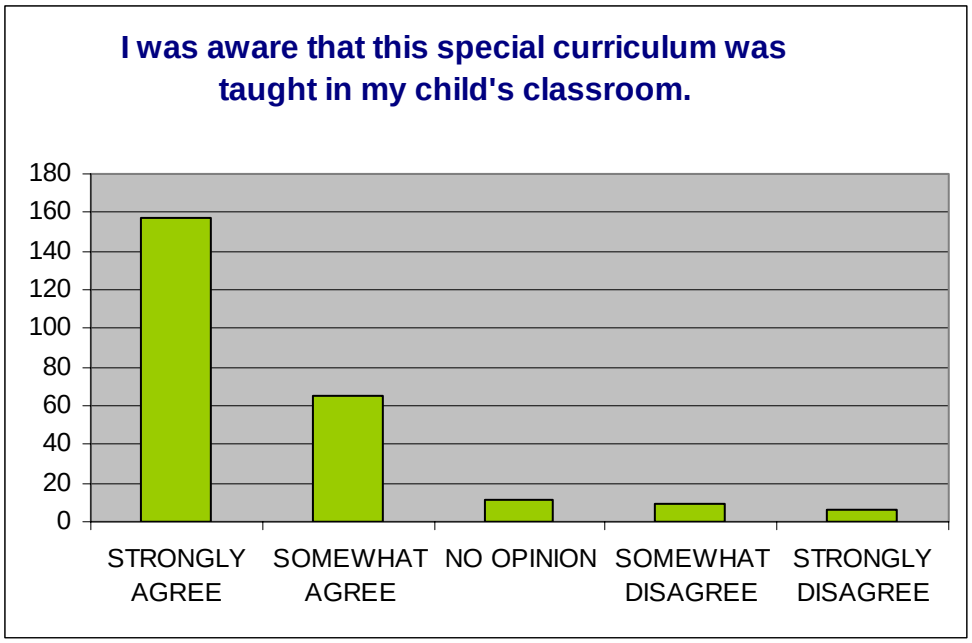
- Longer lessons
- More information on investing.
- More take-home exercises
- Sending more info to parents ahead of time so we can discuss this topic in tandem with child at home.
- Possible field trips.
- Expansion of bartering-- integrate the notion into social studies curriculum (Native Americans, Pioneers, Colonists, etc.)

Other selected comments:

- I'm glad to know that my son learned in this program.
- I think all kids across United States should enjoy this, including parents. It shows people how to be responsible.
- I am very happy about this.
- It has opened my eyes to how little it takes to save weekly and how much they'll have by graduation. I also have a goal now.
- We live in a consumption culture. I do not have consumerism goals and am thrilled to see our schools teach financial responsibility! It's tough out there and our children need tools/ knowledge! Thank you!
- My son talked about the subject a lot at home and is excited about his money-savvy piggy bank!
- My daughter saved $35!! Great Job! Thanks
- I'm glad to see that the school is teaching not just theories but also practicality- Great job!
- I think our children would benefit from learning this as early as 1st grade.
- It's wonderful!
- Good program would like to see it continue.
- I think 2nd grade was a little too young to learn about money and the responsibility of it. My child does not fully understand but maybe will in a year or two.
- This is a great program. It reinforces teachings at home.
- We feel our student gained tremendously from the program. She came home and promptly put her birthday money in the bank, dividing it between each of the sections.
- The bank trip was a nice tie-in.
- I love the way my son would come home and tell me how much he wanted to save for some soccer shoes, not only that he would talk about saving money. That didn't come across his mind ever before.

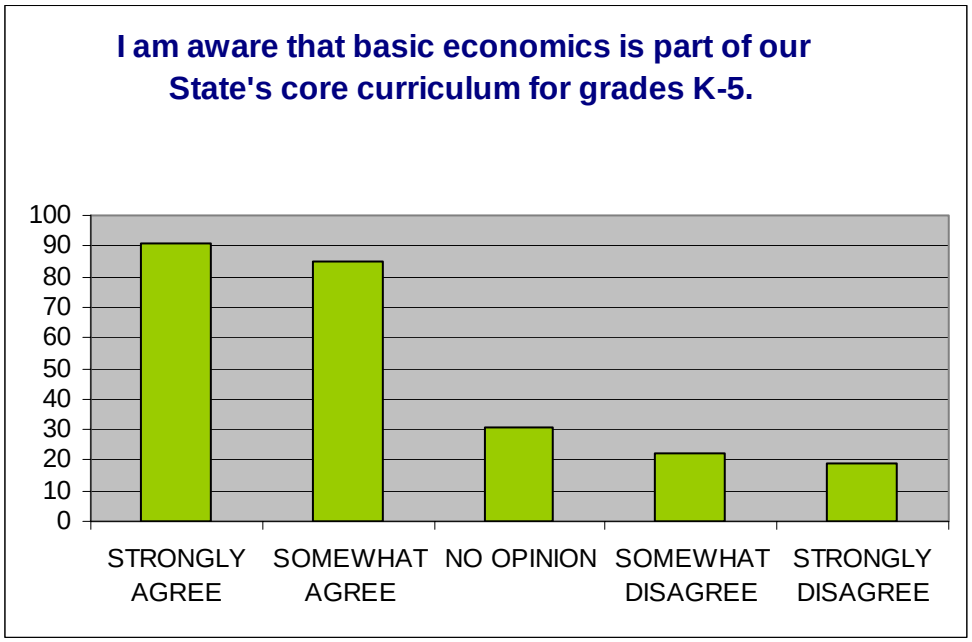
# of Respondents	250

Caption	Count	Percentage*
Cascade Elementary School	0	0.00%
DeLong Elementary School	43	17.20%
Discovery Elementary School	32	12.80%
Discovery Lab School	0	0.00%
Finley Elementary School	0	0.00%
Geiger	14	5.60%
Grass Lake School	0	0.00%
Jason Lee Elementary School	0	0.00%
Kalama Elementary School	0	0.00%
Kennydale Elementary School	7	2.80%
Lake Quinault School	10	4.00%
McDonald Elementary School	0	0.00%
Orchard Heights School	9	3.60%
Pioneer Elementary School	13	5.20%
Purdy Elementary School	32	12.80%
Sherman Elementary School	9	3.60%
Skyview Elementary School	0	0.00%
Spanaway Elementary School	14	5.60%
Sunset Elementary School	0	0.00%
Talbot Hill Elementary School	0	0.00%
Terrace Park School	25	10.00%
Tillicum Elementary School	7	2.80%
Tukwila Elementary School	35	14.00%
Wa He Lut Indian School	0	0.00%
Whitman Elementary School	0	0.00%
Unknown	0	0.00%



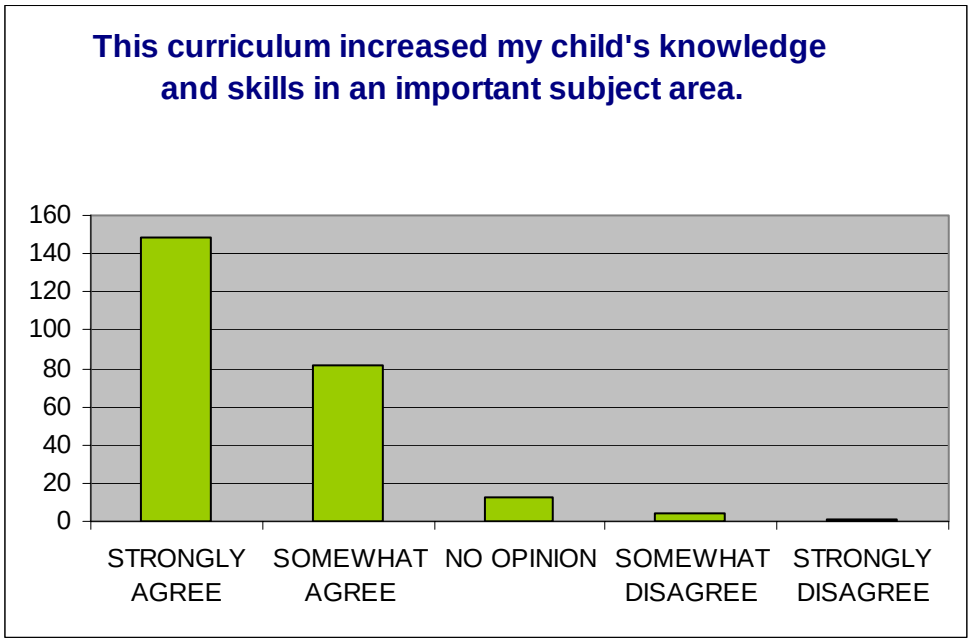
# of Respondents	248

Caption	Count	Percentage*
STRONGLY AGREE	157	63.31%
SOMEWHAT AGREE	65	26.21%
NO OPINION	11	4.44%
SOMEWHAT DISAGREE	9	3.63%
STRONGLY DISAGREE	6	2.42%



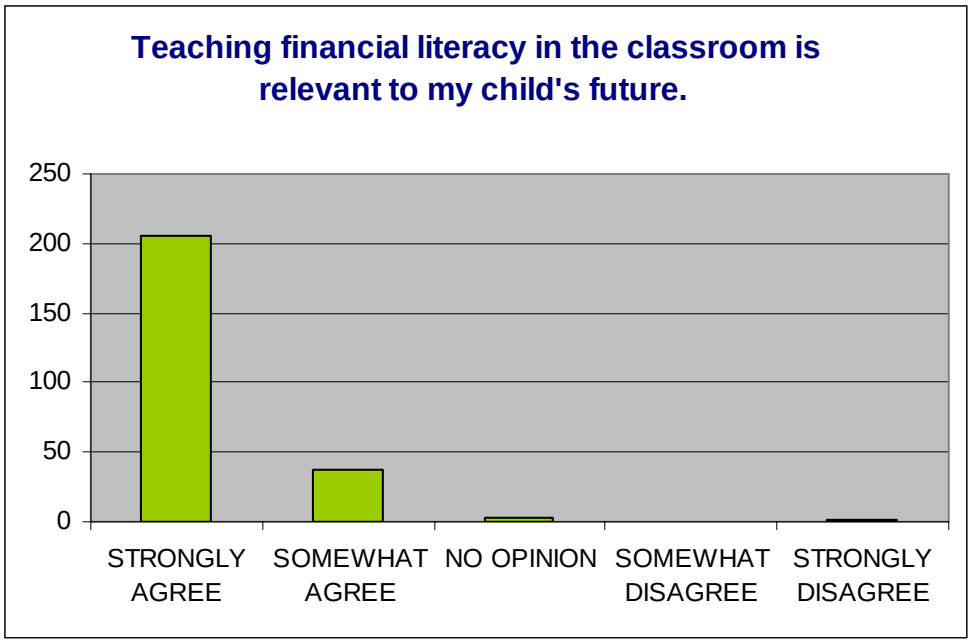
# of Respondents	248

Caption	Count	Percentage*
STRONGLY AGREE	91	36.69%
SOMEWHAT AGREE	85	34.27%
NO OPINION	31	12.50%
SOMEWHAT DISAGREE	22	8.87%
STRONGLY DISAGREE	19	7.66%



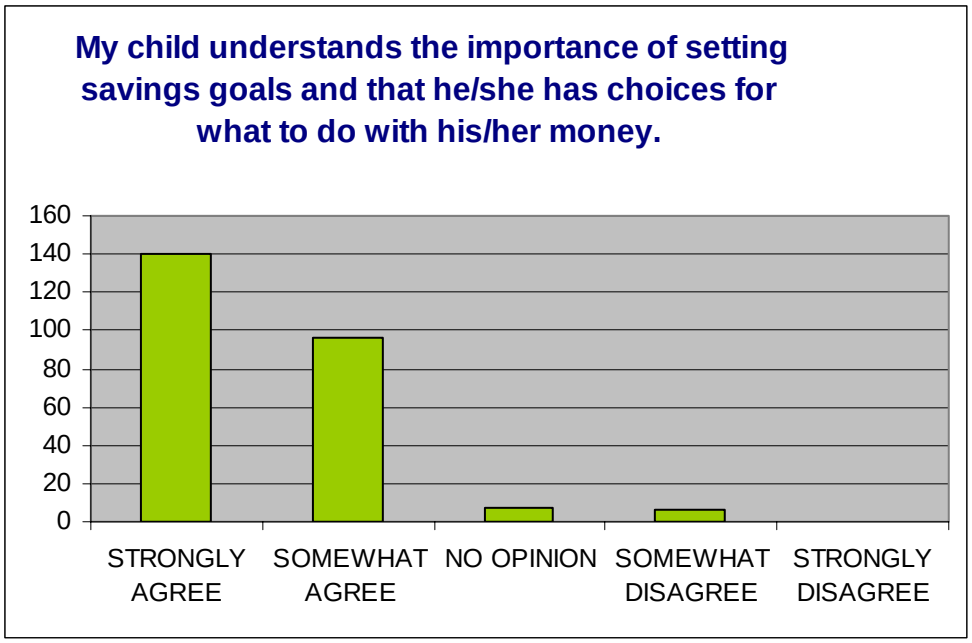
# of Respondents	248

Caption	Count	Percentage*
STRONGLY AGREE	148	59.68%
SOMEWHAT AGREE	82	33.06%
NO OPINION	13	5.24%
SOMEWHAT DISAGREE	4	1.61%
STRONGLY DISAGREE	1	0.40%



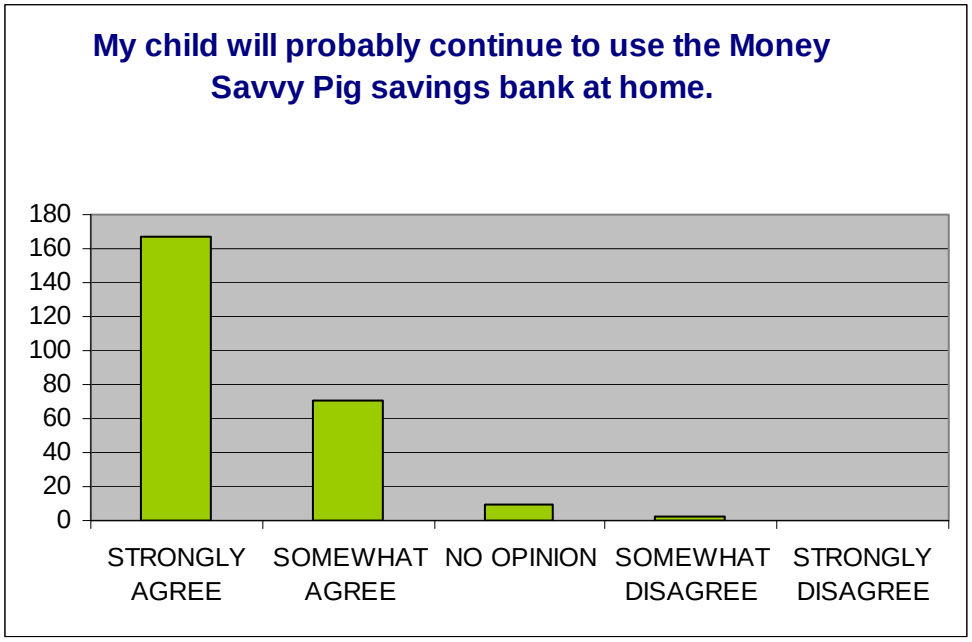
# of Respondents	248

Caption	Count	Percentage*
STRONGLY AGREE	206	83.06%
SOMEWHAT AGREE	37	14.92%
NO OPINION	3	1.21%
SOMEWHAT DISAGREE	0	0.00%
STRONGLY DISAGREE	2	0.81%



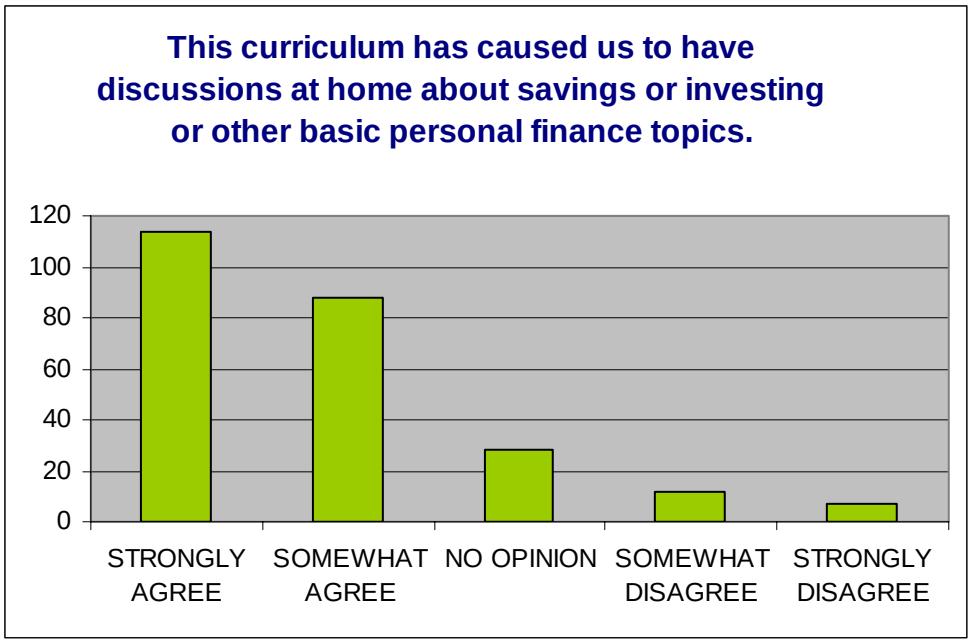
# of Respondents	249

Caption	Count	Percentage*
STRONGLY AGREE	140	56.22%
SOMEWHAT AGREE	96	38.55%
NO OPINION	7	2.81%
SOMEWHAT DISAGREE	6	2.41%
STRONGLY DISAGREE	0	0.00%



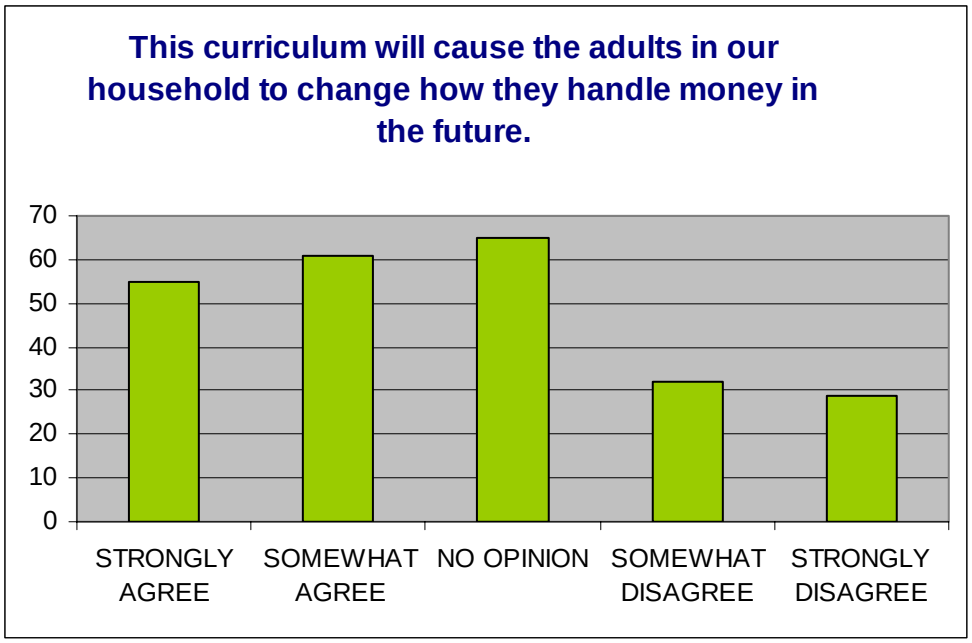
# of Respondents	249

Caption	Count	Percentage*
STRONGLY AGREE	167	67.07%
SOMEWHAT AGREE	71	28.51%
NO OPINION	9	3.61%
SOMEWHAT DISAGREE	2	0.80%
STRONGLY DISAGREE	0	0.00%



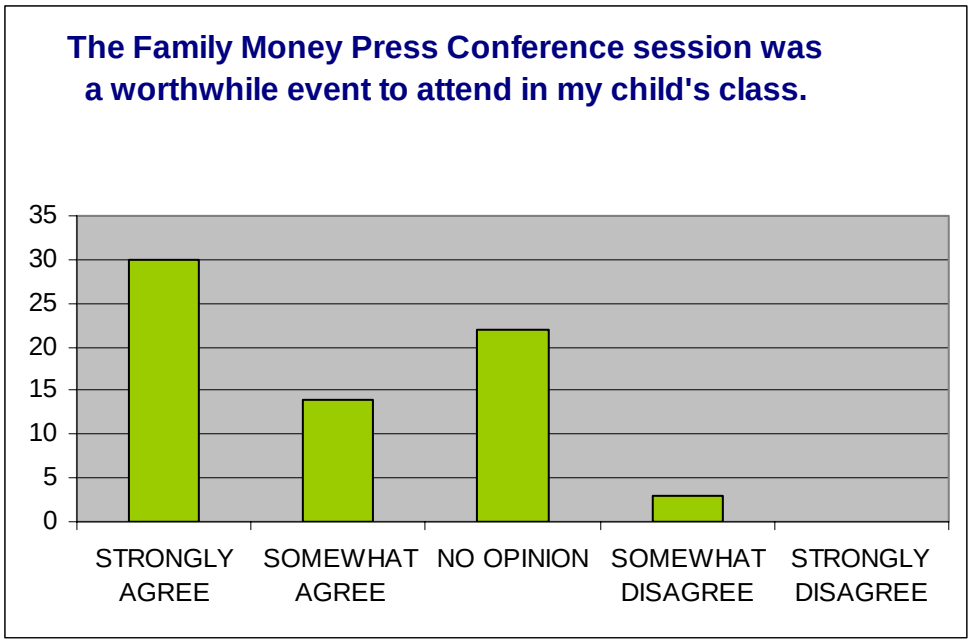
# of Respondents	249

Caption	Count	Percentage*
STRONGLY AGREE	114	45.78%
SOMEWHAT AGREE	88	35.34%
NO OPINION	28	11.24%
SOMEWHAT DISAGREE	12	4.82%
STRONGLY DISAGREE	7	2.81%



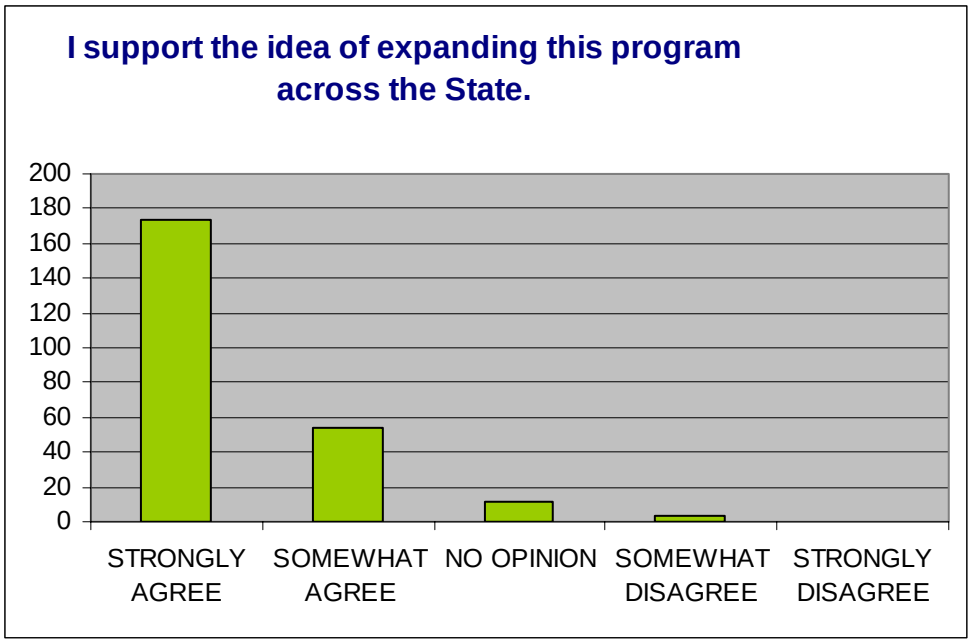
# of Respondents	242

Caption	Count	Percentage*
STRONGLY AGREE	55	22.73%
SOMEWHAT AGREE	61	25.21%
NO OPINION	65	26.86%
SOMEWHAT DISAGREE	32	13.22%
STRONGLY DISAGREE	29	11.98%



# of Respondents	69

Caption	Count	Percentage*
STRONGLY AGREE	30	43.48%
SOMEWHAT AGREE	14	20.29%
NO OPINION	22	31.88%
SOMEWHAT DISAGREE	3	4.35%
STRONGLY DISAGREE	0	0.00%



# of Respondents	242

Caption	Count	Percentage*
STRONGLY AGREE	173	71.49%
SOMEWHAT AGREE	54	22.31%
NO OPINION	12	4.96%
SOMEWHAT DISAGREE	3	1.24%
STRONGLY DISAGREE	0	0.00%